Contribution ID: **1005** Type: **Parallel Talk**

Leptogenesis from a feebly interacting dark matter sector

Friday, 8 July 2022 09:15 (15 minutes)

We perform an analysis of leptogenesis in the context of a simple extension of the Standard Model with two fermions, one charged (χ) and one neutral (ψ), in addition to three right-handed neutrinos, interacting through a charged gauge singlet scalar S. The dark sector (χ, ψ and S) interacts feebly and produces a relic density consistent with the existing data. The right-handed neutrinos decay into the charged scalar S and a lepton, providing an additional source of CP asymmetry, along with contributing through the virtual exchange of S in the standard decay channel. The advantage of this scenario is that it can generate naturally the observed baryon asymmetry of the universe, even for right-handed neutrino masses in 10 TeV region, without requiring neutrinos to be degenerate.

In-person participation

Yes

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Session Classification: Dark Matter

Track Classification: Dark Matter